THE HAWAII STATE ENVIRONMENTAL IMPACT STATEMENT BIBLIOGRAPHIC DATA BASE PROJECT: Final Report

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I. INTRODUCTION

Background of Study

Purpose

The goal of EIS systems, federal, state and county, is to provide decision makers with those kinds of environmental information that would lead to improvement of their decision making[1]. Information on the consequences of an action that will have a significant impact on the environment is compiled and analyzed according to regulations promulgated by the Council on Environmental Quality (CEQ) for the Federal system, by the Environmental Quality Commission (EQC) for the Hawaii State system, and by County Councils for the county systems. The collected information is packaged in a document commonly referred to as an Environmental Impact Statement, or simply EIS. Thus the EIS is basically an information document. The collected information is taken into account by the governmental agency or official with decision making power. The decision to undertake, approve, modify or reject the proposed action is made partially on the basis of the information in the EIS.

A particular EIS relates to a particular proposed action. However, much of the information in the EIS may be pertinent to sites in the vicinity of or similar to the site of the proposed action or to actions of the same or similar types elsewhere. Thus it is possible to reuse information in one EIS in the preparation of another.

The State EIS Law, Chapter 343 Hawaii Revised Statutes, (HRS) encourages the reuse of EIS information. Section 343-4(c) states:

> Whenever an agency proposes to implement an action or receives a request for approval, the agency may consider and, where applicable and appropriate, incorporate by reference in whole or in part previous determinations of whether a statement is required and previously accepted statements.

The EQC regulations governing the State EIS system include a section on the reuse of EIS information. Section 1:32a states:

> Previous determinations and previously accepted EIS's may be incorporated by applicants and agencies whenever the information contained therein is pertinent to the decision at hand and has logical relevancy and bearing to the action being considered.

Although much of the information in EIS's prepared in the past might thus be of value to the preparers and reviewers of EIS's in the future, and the preparers and reviewers are encouraged to make use of the already collected information, the access to the contents of previous EIS's has until now been difficult. A person may recall that an EIS previously prepared or reviewed is pertinent to a current preparation or review responsibility. Otherwise he or she would have to check with the EQC or the State Office of Environmental Quality Control (OEQC), and what guidance he or she could get from the staffs of those agencies would also be based on personal recall. Effectively, then, much of the information collected in EIS's that would have future value has been inaccessible.

The intent of the study here reported was to design a system for facilitating the retrieval, from EIS's on actions affecting the Hawaiian archipelago, of information that would be useful for purposes other than approval decisions on the respective projects.

Improvement of the EIS system through facilitation of information retrieval from EIS documents has been of interest to the University of Hawaii Environmental Center, which reviews many EIS's in the Federal, State, and County systems. It is also a matter of concern to the State Office of Environmental Quality Control and to the Hawaii Coastal Zone Management program for reasons indicated below.

Environmental Center concerns

The advantages of in-house preparation of both assessments and some EIS's was consistently recommended by representatives of State agencies consulted in the preparation of the Environmental Center's report on the Hawaii State Environmental Impact Statement System.[2] The Center considered that significant monetary and time savings would result in the EIS system if full reuse of EIS information were made by agencies. By facilitating access to information contained in previously prepared EIS documents, the Center felt that there would be a reduction in duplication of data collection efforts, a reduction of preparation costs, and a stimulus to the undertaking by agencies of in-house environmental assessment and EIS preparation.

Another advantage of increased access to previously prepared EIS documents pointed out would be improvement in the review of EIS's for actions currently being considered. Independent review by both agencies and private interests could substantially be enhanced if the EIS on an action under consideration could be compared with previously prepared EIS's dealing with actions in the same vicinity or of a similar type.

Increased access to previously written EIS's, it was believed, would contribute greatly to consistency of EIS documents and would improve the overall EIS process by cutting out costly duplication and enhancing the capacity of reviewerers.

OEQC concerns

State law created the Office of Environmental Quality Control to "coordinate efforts to determine and maintain the optimum quality of the environment of the state.[3] The Director of OEQC is mandated by Section 341-4 HRS, in summary, to coordinate all State agencies in ecological and environmental matters; develop a system for monitoring ecological, environmental, and social conditions, changes, and effects; coordinate or conduct research on matters concerning environmental quality; encourage public acceptance of proposed legislative and administrative actions on ecology and environmental quality control; and initiate public educational programs.[4]

In the light of the responsibilities placed on its Director by the above mandate, the OEQC has had a natural concern with the optimal use of the State EIS system, even though the operation of that system is the direct responsibility of the EQC. The OEQC must also be concerned with the operation of other EIS systems in Hawaii.

CZM concerns

The Coastal Zone Management (CZM) program of the State has among its objectives some that an improvement of the EIS system would meet. These include:

a. Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

b. Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

CZM policies that an improved EIS system would address include:

a. Improve the technical basis for natural resource management;

b. Effectively utilize and implement existing law to the maximum extent possible in managing present and future coastal zone development;

c. Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the general public to facilitate public participation in the planning and review process.

The improvement of the EIS system is also in line with Hawaii CZM program activities stated in a recent EIS on the program:

> The Hawaii CZM Program will support efforts to improve the Environmental Impact Statement (EIS) regulations and review procedures in order to insure that "Negative Declarations" are not used to avoid necessary review and comment on projects that may have significant environmental effects.[5]

Study proposal

In the light of the concerns indicated above, the Environmental Center, at the request of and with the assistance of the Office of Environmental Quality Control, prepared a proposal for CZM program support of a project to determine the utility of an indexed bibliographic data system based EIS contents, to design a system that could be applied to EIS's related to Hawaii and would meet the needs of users, and to use the decision in the preparation of the actual Data Base. The proposal was submitted by the OEQC to the State Department of Planning and Economic Development (DPED) which is the lead agency for the Hawaii CZM program.

The proposal was accepted by the Federal Office of Coastal Zone Management in October 1978. Actual work on the EIS Bibliographic Data Base Project began in December 1978.

Scope of Report

The methodology employed in designing the EIS Bibliographic Data Base, and the work of actual data base preparation are discussed in Part II of this report.

Because the utility of the initial Data Base will decrease in the future as additional EIS's are prepared, means for updating the Data Base so as to maintain its utility are presented and evaluated in Part III, together with suggestions for its extension to cover additional types of documents.

The EIS Bibliographic Data Base itself, is being published separately.

II. DESIGN AND PREPARATION OF EIS BIBLIOGRAPHIC DATA BASE

Introduction

When this project was undertaken, a large number of EIS's had already been prepared in accordance with Federal, State, and County requirements. These, of course constitute the major part of an EIS data base. Early in the project it was recognized by the team that was organized for the work that the bibliographic component that was necessary to facilitate use of the information in the EIS's would have to include individual abstracts of the EIS documents, indexes facilitating information retrieval, and instructions to users. However, several questions as to the scope of the bibliographic data base, and the method of handling the information in it had to be approved. These related to:

1. Coverage of the data base
    a. Geographic
    b. Types of documents
2. Scope of abstracts
    a. Information to be included
    b. Extent of detail
3. Nature of indexes
    a. Bases for indexing
    b. Extent of standardization of indexed categories
    c. Standard categories
4. Method of information handling

    (Choices among various manual and computer methods.)

To answer these questions, it had been proposed that practices in other states be surveyed, and that potential users of an EIS bibliographic data base in Hawaii be surveyed to determine their needs and the form of the data base that would best satisfy their needs.

To provide the potential users with some guidance as to the possibilities as to the scope and form of the bibliographic data base, a sample draft abstract, tentative lists of index categories, and a plan for the bibliographic data base were prepared by the project team. These were submitted to a sample of potential users whose cooperation in the study was solicited. The final decisions on coverage; abstract scope, and index categories were based on analysis of the results of the user survey taking into account practicability. All decisions were submitted to the OEQC through project reports or otherwise for approval prior to implementation.

As decisions were reached as to form and coverage, the actual preparation of the EIS Bibliographic Data Base began.

Project Team

The project team initially assembled at the Environmental Center was comprised of the Center Director, who served as principal investigator, a project manager, a project research associate, the Associate Specialist of the Center, an EIS analyst from the OEQC. After decisions had been reached as to the coverage and form of the Data Base, three student abstractors and a student clerk-typist were employed.

Initial decisions

Geographic coverage

Two sorts of decisions had to be made as to the coverage of the data base — decisions as to geographic coverage and as to the types of documents to be covered. The project leaders decided, with OEQC approval, that the data base should include documents that discuss environmental impacts of actions that occur within, or have a direct effect on the Hawaiian Archipelago.

EIS's on actions proposed outside of Hawaii would in general not be included, because such actions would not usually have significant effect in the Hawaiian Archipelago. However, a Federal EIS on the Amchitcha Island nuclear island test was included in the coverage because this EIS covered possible effects in the Hawaiian Archipelago.

Document coverage

In the Federal, State, and County EIS systems it is required:

1. that EIS's as originally submitted (Draft EIS's in the Federal System) be made available for review by agencies other than those preparing them or having approval over the actions to which this pertains; and

2. that when finally submitted, the EIS's be responsive to all substantial comments from reviewers. The review and response progress is essential to ensure that the environmental impact analysis in the EIS's is adequate and valid. The State and County systems, in addition, prescribe formal acceptance procedures for the final EIS's.

It was clear from the outset that the EIS Bibliographic Data Base should include all final, accepted EIS's discussing environmental impacts within the chosen geographic area. Decisions had to be made, however, as to the inclusion of some other types of documents in the EIS systems or similar to EIS's. The decision as to document-type coverage was based on the criteria of finality of the documents and the probable validity of the information included in them. Documents submitted to the Department of Health in support of applications for zones of mixing (ZOM's), under the provisions of Public Health Regulations Chapter 37A, are considered to be EIS's by the DOH, are reviewed like other EIS's. Hence they are included in the data base.

We originally suggested that environmental assessments concluding that impacts will be insignificant, or "Negative Declarations", might be covered in the data base. These statements are final, to the extent that no further assessment of the impacts of the projects to which they relate is required in the EIS systems. However, negative

declarations are rarely subjected to anything like the intensity of review of EIS's. Hence the priority of including them in the data base was clearly much lower than that respecting the accepted EIS's, and the project concentrated on identifying, abstracting, and indexing the contents of the accepted EIS's. Recommendations as to the possible future extension of the data base to include negative declarations are included in Part III of this report.

Environmental assessments in concluding that impacts will be significant, or "Preparation Notices", are ordinarily be followed by EIS's much more complete than the original assessments. Hence, there seemed no reason to include such documents in the data base.

Although there are several Hawaiian EIS's that have been formally submitted and reviewed but not yet formally accepted, these do not yet include review comments or responses to them. Hence, such assurance as to validity as is provided in the review process does not apply to these documents, and it was decided that they should not be included in the data base.

Draft sample bibliography

To provide potential users of the final data base with something concrete that they could review and on which they could make suggestions or improvement, a draft sample bibliography was prepared by the project team on the basis of the study of 12 randomly selected EIS's. This document included a set of instructions to users the abstracts of the 12 EIS's, a set of key words applying to types of actions, and 2 sets of about 25 key words each applying respectively to the setting of proposed actions and to their anticipated impacts.

Each of the abstracts contained such bibliographic information as an accession number and the title and preparer of the EIS, the location of the action to which it applied, a brief description of the action, and indication of the contents of the EIS in terms of the key words applying respectively to the section of the action and its impacts. Each of the sets of key words list and indications of the contents of the EIS in terms of the key words applying to setting and impacts and page citations to the discussing of the topics indicated by the key words.

The index section included four indexes and other material including page citations to discussions of mitigative measures and alternatives and citations to references cited in the EIS.

Surveys

Survey of other states

To help assess the feasibility and utility of creating a bibliographic data base for Hawaii's EIS's, other states with EIS laws were surveyed to determine to what extent they had devised information retrieval systems for their EIS's.

Letters were sent in December 1978 to 21 states, 1 territory, and the Federal government inquiring if any had developed an information retrieval system. The survey included the Territory of Puerto Rico and the Federal Environmental Protection Agency

(EPA) for the Federal system. We asked each state whether they had a data base for information contained in their EIS documents. The list of States, Territories and the Federal system was obtained from a directory compiled by the Environment Reporter and was current as of November 1978.

The results of the survey of other states, shown in Table 1, revealed that most states have not implemented any information retrieval system for EIS. Of the agencies surveyed only two states, New York and Washington had fully working systems and two others, Virginia and Maryland, were implementing systems. None of these systems included abstracts of EIS's, a key feature of the system designed in this project. However, the breakdowns of the type of actions for the New York and Washington systems were used to help formulate the type of action categories for the proposed system for Hawaii.

User Survey

In order for any information retrieval system to be fully utilized it is good practice to survey the potential users to determine their information needs. As part of the methodology for constructing the EIS Data Base, the project team surveyed personnel from 47 Federal, State, and local agencies, environmental groups, and private consultants, that deal extensively with EIS's on Hawaii or data bases in general. The interviews took place from the end of March 1979 to the beginning of May 1979. A list of the people consulted is shown in Table 2.

The method used in the survey was similar to the method that had been used by the Environmental Center in its report on the State EIS system[6]. The OEQC contacted Federal, State and County agencies and requested their cooperation on the project. The final draft data base document was sent by the EC to agencies that had been contacted by OEQC. Environmental groups and private consultant firms who had taken part in the EC's study on the State EIS System were also contacted and their advice was requested. A notice was placed in the March 28, 1979, EQC Bulletin inviting other interested parties to take part in the review of the draft report.

Those responding to the request to act as reviewers were sent a follow-up letter requesting their comments on four areas:

1. Comprehension of format.
2. Information deletions or additions.
3. Suggestion for improving format.
4. Utilization of the data base.

The follow-up letters to reviewers were of three types: 1) letters to Federal, State, and the City and County of Honolulu agencies; 2) letters to counties other than the City and County of Honolulu; and 3) environmental groups and private consultants that had been actively involved in the EIS system and interested in the data base.

All of the letters requested that substantial or complex comments be submitted in writing, but interviews with designated representatives were requested except in the case of the agencies of counties other than the City and County of Honolulu. The interview process was preferred because interviews would afford opportunities to follow up

Table 1.

RESULTS OF SURVEY OF STATES WITH EIS SYSTEM

	States	Replied	Date	Data Base
Arizona -	Wildlife Planning and Development Division First Game Commission	No		
Connecticut -	Department of Environmental Protection	Yes	1/08/79	No
Georgia -	Department of Transportation	Yes	1/05/79	No
	Office of Planning and Budget	Yes	1/09/79	No
Indiana -	Environmental Management Board	No		
*Maryland -	Department of Natural Resources	Yes	2/09/79	No*
	Department of State Planning	Yes	2/16/79	Yes
Massachusetts -	Executive Office of Environmental Affairs	Yes	1/18/79	No
Michigan -	Environmental Review Board	No		
Minnesota -	Environmental Quality Commission	Yes	5/21/79	No
Mississippi -	Mississippi Resource Council	Yes	7/05/79	No
Montana -	Environmental Quality Council	Yes	1/17/79	No
Nebraska -	Office of Planning and Programming	Yes	1/09/79	No
Nevada -	Environmental Protection Services	No		
New Jersey -	Department of Environmental Protection	Yes	1/08/79	No
New York -	Department of Environmental Conservation	Yes	1/11/79	Yes
North Carolina -	Department of Natural and Economic Resources	No		
Puerto Rico -	Environmental Quality Board	Yes	7/27/79	No
South Dakota -	Department of Environmental Protection	No		
Texas -	Office of the Governor	Yes	1/05/79	No
Utah -	Assistant Attorney General	Yes	8/15/79	No
Virginia -	Council on the Environment	Yes	1/11/79	In progress
Washington -	Department of Ecology	Yes	1/03/79	Yes
Wisconsin -	Office of State Planning and Energy	Yes	1/17/79	No
	U.S. Environmental Protection Agency	Yes	1/16/79	No

*The Maryland Department of Natural Resources stated that they have no Data Base System but the Department of State Planning later wrote to explain that the term EIS refers only to Federal EIS under NEPA and there is no system which deals with Federal EIS's. However, the State Planning Department does keep a computerized file of State impact reports.

Table 2.

EIS Bibliographic Data Base Project

Agencies and Organizations Interviewed During March - May 1979

Governmental Division	Contact Person	Date	Written Comments	Interview
Federal Agencies:				
U.S. Army Corps of Engineers	James Marangos	Mar 23		X
Federal Highways Administration, Dept. of Transportation	Lush Kusumoto	Mar 29		X
Soil Conservation Service, Dept. of Agriculture	Kenneth Kaneshiro	Mar 30		X
Fish and Wildlife Service, Dept. of the Interior	Maurice Taylor	Apr 17		X
U.S. Army-Tripler	Steven Kim	Apr 16		•
U.S. Coast Guard	John Otranto	Apr 20		X
U.S. Air Force	Richard Gorden, Raymond Shiroma	May 1		X
State Agencies:				
Office of Environmental Quality Control	Helene Takemoto, Richard Scudder, Harry Akagi	Mar 27	X	X
Dept. of Accounting and General Services	Tewane Tominaga	Mar 22		X
Dept. of Defense	Wayne Tomoyasu	Mar 28		X
Hawaii Housing Authority, Dept. of Social Services and Housing	Herbert Wong, Harold Kurihara	Mar 29		X
Statewide Transportation Planning Office, Dept. of Transportation	Ah Leong Kam	Mar 28	X	X
Dept. of Health	Jacquelin Parnell	Mar 23		X
Dept. of Hawaiian Home Lands	Oscar Asahina	Apr 3		X
Dept. of Planning and Economic Development, Coastal Zone Management Section	Rodney Funaoshi	Apr 5		X
Dept. of Planning and Economic Development, Planning	Ah Sung Leong	Apr 9		X
Dept. of Land and Natural Resources	Susumu Ono	Mar 18	X	
Dept. of Transportation, Water Transportation Facilities Division	Dan Tanaka	Apr 10	X	X
Dept. of Land and Natural Resources, Forestry Division	Robert Merrian	Apr 17		X
Lt. Governor's Office	Ewna Peterson	Apr 16		•
Dept. of Planning and Economic Development	Anthony Oliver	Apr 24		X
Dept. of Attorney General	Larry Lau	Apr 26		X
University of Hawaii:				
Sea Grant	Raymond Tabata	Mar 30		X
Planning Facilities	Walter Muranka, Tomatsu Sahara	Mar 21		X
Hawaii Coastal Zone Data Bank	Thomas Cooney, Robert Cunningham	Mar 20		X
Graduate School of Library Studies	Gerald Lundeen	Apr 18		X
Botany Dept.	Winona Char	Apr 16		X
Water Resources Research Center	Edward Nurabayashi			•
County:				
Dept. of Land Utilization, City and County of Honolulu	John Whalen	Mar 28	X	X
Dept. of General Planning, City and County of Honolulu	Clarence Tom	Apr 3	X	X
Dept. of Public Works, County of Hawaii	Edward Harada	Mar 21	X	
Planning Department, County of Hawaii	Sidney Fuke	Mar 29	X	
Planning Department, County of Maui	Toshio Ishikawa	Mar 29	X	
Environmental Organizations:				
Life of the Land	Frank Miller Doug Heller	Apr 2 Apr 5	X	X •

Table 2. (continued)

Greenpeace	Susan Difloure	Apr 6		X
Sierra Club	David Raney	Apr 25		X
Outdoor Circle	Susan Fristoe	Apr 11		X
American Lung Association of Hawaii	Jim Morrow	Apr 11		X
Conservation Council for Hawaii	Peter Galloway	Apr 19		X
Private Consultants:				
VTN Pacific	Fred Proby	Apr 2		X
Gray, Rhee and Associates, Inc.	David Fills	Apr 4		X
Nelson Okamoto and Associates	Gary Okamoto	Apr 5		X
Environmental Impact Study Corporation	Marvin Kuira	Apr 5		X
R. M. Towill Corporation	Bud Vuillemot	Apr 12		X
Legal Publishing Hawaii, Inc.	Steve I. Okumura	May 4		X
H. Togi - Planning and Research, Inc.	Chester Koga	Apr 14	X	
Documentation Associates	Marianne Oberman	Jun 13		X
Dept. of Transportation, Air Transportation Facilities Division	Owen Miyamoto	Mar 29	X	
Dept. of Transportation, Land Transportation Facilities Division, Planning	Henry Uehara	Mar 23	X	

* - Telephone interviews only.

immediately on ideas or criticisms presented, but financial limitations did not allow the conduct of interviews except on Oahu.

The interviews averaged 1½ hours in length and covered the topics listed above. In addition, reviewers were asked to detail their special needs, and make suggestions for updating, and distribution. At most interviews, two data-base project members were present, making it possible to keep accurate notes while not interfering with the continuity of the interview.

Results of the user survey

Most potential users surveyed felt the data base would be useful to their organizations. Some agencies and consultants had used the information in previously prepared EIS's, when preparing new EIS's. The EIS on Honokohau Harbor is one such example.[7] Several agencies and consultants stated the data base would be useful in writing environmental assessments or negative declarations on actions that would have little or no impacts on the environment.

Most of the users surveyed, preferred a shorter format than was originally proposed in draft form. A summary of the changes suggested by the reviewers and implemented in the revised format include:

1. Deletion of the page citations in the content portion of the abstract in favor of indicating topics of major concern and original data. A majority of those interviewed, felt that including page numbers to indicate where in the EIS certain setting and impacts were discussed, was not necessary. Those who felt page numbers were extraneous explained that it would increase the size of the data base. Some felt that listing the page numbers could be misleading. In other words the mere fact that a subject was mentioned on a certain page was no guarantee that the EIS contained any substantial or helpful information. Many of those interviewed felt that an indication of the major topics discussed and original data presented could be much more helpful. Although we agreed that subjects of major importance should be identified we felt that it would be too difficult to judge original information from derivative information. The suggestion that original data should be identified along with page citations was not implemented.

2. Deletion of specific identification of mitigation measures and alternative resource commitments and identification of reviewers in the abstracts and the deletion of a proposed reference index as index of setting by type of action. This type of information could easily be obtained by using the table of contents of the desired EIS; and most reviewers felt that the information was not necessary in the abstract.

3. Addition of the acceptance date of the EIS. This would give an indication of the time span of the action from completion of the EIS to acceptance.

4. Revision of the location identification in the abstract to include the island, judicial district, the nearest town and where possible the tax map key number (TMK). Some agencies kept records by TMK's and we felt adding TMK's would make the data base more useful to these agencies.

5. Use of code identifications for all Federal, State and County agencies.

6. Revision of the lists of key words applies to types of action and to environmental setting, and to impact, and the provision of definitions for key words.

7. Expansion of the accession numbers from three digits to five digits. This would give the system more room for expansion.

A number of users surveyed stated they would like to know the status of the project for which the EIS was written, whether implemented, withdrawn, or pending. A number of those interviewed said that this information would be helpful in comparing the actual to the predicted outcomes of the project as stated in the EIS or for looking at cumulative impacts. Others stated that the abstracts could be misleading if users assumed that all projects were implemented because they had a final EIS. Information on project status is fragmentary; each agency keeps tract of only the projects under their jurisdiction. The data base would provide a central location for this information. The project team agreed and are in the process of compiling lists by project status will be included in the data base.

A few reviewers suggested that data base personnel examine the sites of the project to determine if the conditions or predictions stated in the EIS had been met. Although such a follow-up would constitute a useful future study, we felt that this was beyond the scope of the data base project and present staff capabilities.

EIS List

Once the extent of the coverage was decided upon, a list of existing EIS's had to be compiled. Utilizing various sources we have compiled a complete list of final/revised EIS's for actions affecting the Hawaiian Archipelago. The sources used included:

1. EQC's EIS Register and EQC Bulletin.

2. OEQC's card file of EIS actions.

3. EC's EIS files.

4. A list of EIS's compiled by the State library system.[8]

5. Bibliography of Coastal Zone Management documents prepared by H. Mogi.[9]

After a preliminary list was completed, a letter was sent to each Federal, State and County agency with jurisdiction over the kinds of projects which EIS's related asking them to verify the accuracy of the list and to add any EIS's that were not included.

The final list containing 327 entries of Federal, State and County EIS's, including State Department of Health ZOM documents, has been verified by each agency requested. In addition, we requested the OEQC to verify the entries on the final list. The EIS list was verified by OEQC. We feel reasonably confident that this list is complete.

Final Form and Placement of EIS Bibliographic Data Base

Overall form

As any bibliographic data base, the EIS Bibliographic Data Base consists of two components, the data base component consisting of the original documents containing useful information and the bibliographic component through which the retrieval of the information is facilitated.

Placement of data base

Collections of EIS's on file at the Office of Environmental Quality Control and the Environmental Center at the beginning of the project have been supplemented so that at each of these offices there is now a nearly complete set of the EIS's that constitute the data base at the time of compilations of the project.

Format of bibliography

The format of the Bibliogrpahy as finally designed is similar to that used in Environmental Abstracts, Pollution Abstracts, and Oceanic Abstracts. It is made up of two parts: abstracts, and indexes.

1) Abstracts. An abstract has been prepared for each EIS. The abstract contains: the accession number, title, and date of the EIS, the proposing agency/applicant/ preparer, the action to which the EIS relates, accepting authority/approving agency, the date of EIS acceptance, the EIS system under which the EIS was required, the location, the type of action, a description of the action, and key words indicating topics of the setting and impacts for which there is substantial discussion in the EIS.

2) Indexes. Four indexes have been constructed to aid access to the abstracts. Three of the indexes are pre-coordinated, that is in each, two sets of terms are coordinated in order to find the desired abstract(s). EIS's have been indexed by the coordination of i) location and type of action, ii) location and setting, iii) impact and type of action. The fourth index is an alphabetical list of EIS titles and their cooresponding accession numbers.

After an EIS is identified as being useful to preparers or reviewers through the use of the bibliography the user must turn to the data base itself to obtain the identified EIS.

Physical form and placement of bibliogrpahy

Three alternatives for the placement and form of the bibliography were considered in the project: A) a card file kept in a centralized location (such as the EC or OEQC) cross-referenced by title, preparer, etc.; B) a book catalog in a looseleaf binder with an abstract for each EIS and indexes; C) a computer file on tape (or discs) stored at the University or the State computer facilities, with options for on-line search capabilities.

Those surveyed stated that alternative A, the card catalog would be hard to duplicate for individual agencies or groups, but that if it were maintained only at a central location, access to it would be restricted and a staff person would have to be hired to assist users.

Alternative C, a computer file was considered best by some of the reviewers, but the majority felt the system would not be used extensively enough to warrant on-line capabilities. Most users surveyed stated they did not have access to a computer terminal and would not be able to take advantage of the computer file.

Most of the users surveyed endorsed the catalog in book form, alternative B. However, we found it most convenient to prepare the book catalog through computerization of the information, and hence have assembled a computer file as well as the data base material in book catalog form.

The book catalogs resulting from the project are now in press. The initial printing will allow distribution to these parties cooperating in the user surveys who indicated they would like to receive a copy, and additional copies and interested neighbor island county agencies.

An original copy will be submitted to the OEQC so that additional printings can be arranged, as necessary to accommodate the needs of other potential users.

The book catalog, contained in a binder will consist of four sections:

a) Introduction, including user instructions.

b) Explanation of terms used.

c) Abstract section containing a one or two page abstract for each final/revised EIS.

d) Index section, containing the four indexes.

The Abstracts

Guidelines for abstract preparation

Guidelines for preparing the abstracts were drawn to assure consistency throughout the abstracting of the EIS's. They were also intended to serve as a training manual for the present and future abstractors.

The Guidelines, which will be issued as a supplement to this report, consist of five sections: a) an explanation of the bibliographic information contained in the first part of the worksheet; b) a list of abbreviations of Federal, State and County agencies and a numerical code for each; c) geographical breakdown of the Hawaiian Islands by Island, Judical districts and Town names; d) a list of the type of actions with the definition and scope of each type and a numerical code; e) a list of the content subject descriptors with the definition and scope of each descriptor.

The guidelines were drawn by members of the project staff with the assistance of EC and OEQC personnel. Suggestions made by reviewers during the users survey were incorporated into the guidelines. As project personnel work with the guidelines some additional revisions were made.

Abstracting

The most essential part of the data base project was the abstracting of the EIS documents. The guidelines provided a starting point for the abstracting. A worksheet, incorporating the principles of the guidelines was designed to facilitate the abstracting of the EIS. The worksheet, which will be attached to the Guidelines, sets out the bibliographic information that would be used in the data base. There is a section for a brief description of the EIS. The description includes the scope of the action, the phasing, and the cost where possible. The worksheet lists the content subscriptors for the setting and impacts of the action. Opposite each of the subject descriptors there is a box to be checked if the discussion of the subject in the EIS is substantial; another box to be checked if the discussion indicates original data; and a space in which to record page citations if the descriptor is mentioned whether they are the subject of substantial discussion or not. The space for page numbers has been retained and utilized at the requst of OEQC for further studies, but the page numbers will not appear in the printing of the data base.

Abstracting the EIS's began in June 1979. Technical aids were hired to do the abstracting. In all six different people abstracted EIS documents. Each person, with the exception of the project manager, was trained by the projects research associate. The training lasted approximately two weeks. It consisted of an orientation session by the project manager and the research associate, outlining each part of the guidelines for abstracting, definitions and scope of each content descriptor and type of action descriptor. The technical aids were given some EIS's to work on and were corrected and assisted by the research associate until the technical aids were in agreement as to definitions and format of the abstracting worksheet. In addition the work of the technical aids was monitored by the project manager and research associate to assure accuracy and consistency.

The accession numbers, EIS titles, action locations, action types, and key words relating to setting and impacts that in various combinations are the basis for the indexes are indicated in the abstracts.

The Indexes

As the abstracts were completed they were turned over to staff personnel from the Social Science Research Institute (SSRI) on loan to the EC for this project. The SSRI personnel entered the abstracts in a computer file and produced the indexes from them by use of computer. A completed copy of the data base was made by the SSRI staff from which the final version of the Bibliogrpahy is being printed and bound.

PART III. FUTURE UPDATING AND ENLARGEMENT OF THE EIS BIBLIOGRAPHY

Introduction

Five possibilities for the updating of the EIS bibliography were outlined in the third quarter progress report of the Data Base Study. The feasibility of implemented each of those five recommendations and a sixth will be discussed in detail in this part of the report.

Suggestions will also be made for additional studies related to that just completed.

Updating methods and responsibilities

For continuing viability, any bibliographic data base needs to be kept up to date. If a data base is just a "one shot" affair, it will have very limited use. The question most often asked by potential users of the EIS data base whom we surveyed was "how will the data base be updated?" The accumulation of new EIS's will, of course, proceed automatically. It is the update of the bibliography that is of concern.

Updating the bibliography the will involve three procedures:

1) Preparing abstracts for newly submitted final/revised EIS's in the form designed developed in this project. The abstracts would have to be printed and sent to those who have copies of the original data base.

2) Updating the indexes as new abstracts are added to the system;

3) Compiling, reproducing, and distributing the bibliographies containing the absabstracts and the updated indexes to users.

The abstracts can be prepared as the new revised/final EIS's are submitted. Revision of the indexes and distribution of the revised indexes can be done in accordance with any schedule, but should be done at least once a year. The indexes can be revised manually but the revision will be accomplished most conveniently through the use of a computer program created in this project.

The data base project staff in consultation with OEQC developed six alternative recommendations for updating the bibliography. The major assumption in all six is that any scheme for updating should fit within the existing framework of the EIS process in order that it does not become a financial burden to the State.

The advantages and disadvantages of each of the six schemes are discussed below.

1. Update by the EC as part of its regular program

Advantages:

Since the Environmental Center was created in 1970, it has been involved in the EIS process, it has reviewed EIS's produced under the Federal EIS system (NEPA), State EIS's

prepared under the Governor's Executive Order of 1971 and the present state EIS system (Chapter 343 HRS), and City and County of Honolulu EIS's prepared under the City's SMA ordinance (Ordinance 4529). The Center reviews and provides comments on approximately two-thirds of the EIS's it receives.

Environmental Center personnel could abstract EIS's for the data base while reviewing the draft EIS documents. As necessary, changes could be made to the abstracts when the final/revised EIS's are received. The Center could update the indexes to the data base during periods when the workload permits, using the U.H. Computer. If it is a part of the Center program, the updating would be accomplished by the creators of the bibliography.

Disadvantages:

There are, however, some problems with having the EC undertaking the updating responsibility, at least as a part of its regular program. First there would be the problem of abstracting the EIS's that the Center does not now ordinarily review. This is approximately one-third of the total number of EIS's received in any one year. Under its present budget, the EC would not be able to hire the additional personnel that would be required to abstract the additional third of the EIS's received.

The second problem would be access to computer time. The Center does not receive any allocation of computer time and would require outside funding to pay for computer time.

The likelihood of the Center receiving additional funds from the University to hire additional personnel and pay for computer time is not good. The Center's involvement in the updating thus will depend upon financial support for the project from agencies, such as OEQC or DPED.

2. Update by OEQC as part of its regular program

Advantages:

The OEQC reviews EIS's on all state actions and Federal actions that have impacts in Hawaii and advises the Governor as to their acceptability. The OEQC is mandated by legislation to "offer advice and assistance to private industry, governmental agencies, or other persons upon request".[10] The EIS data base could help it meet this requirement. The OEQC is frequently asked to provide assistance in preparing EIS's. Questions as to the availability of previously prepared EIS's are most often directed to OEQC. The office would benefit greatly be keeping the data base current. OEQC's staff are familiar with the information in the EIS document through their review activities. They have participated in the design of the bibliography therefore they are familiar with procedures of the data base and would not require much instruction on how the system works.

Disadvantages:

There are several disadvantages in having OEQC be responsible for updating the bibliography. The OEQC is not mandated to review EIS's on county actions. In practice its staff have reviewed and commented on county EIS's but continuance of this practice in the future is not assured. If it were discontinued, the OEQC staff would have to abstract

some EIS's they did not review. Although the OEQC has adequate staff for its present level of review activities, hiring of additional personnel might be necessary, if it were to have the additional task of keeping the data base updated, and given present fiscal and legislative restraints, this might not be possible. Access to the State computer system would have to be provided for the revision of the indexes, unless the revisions were made manually.

3. Update by the EQC in connection with the publication of the EQC Bulletin

Advantages:

The EQC is mandated by law to administer the State EIS System.[11] All State EIS's must be submitted to EQC. The EQC could abstract the EIS's as they are initially submitted and could print the abstracts in the EQC Bulletin. This would solve the problem of abstract distribution. Placing the responsibility for updating the data base in the EQC would keep the data base in the agency responsible for the State EIS System. This would assure that each new EIS would be incorporated into the data base.

Disadvantages:

The EQC has a smaller staff than OEQC and may face the same manpower constraints as OEQC. EQC staff would have the additional task of revising the indexes, which would require additional manpower. As the OEQC, the EQC would have to have access to the state computer system for index revision unless the indexes were revised manually.

4. Preparation of abstracts by EIS preparers

Advantages:

Section 343-5 HRS gives the EQC the power to "make, amend, and repeal rules and regulations to implement the provisions of this chapter". The EQC could require preparers of EIS's under the state system to prepare the abstracts of the EIS's. The abstracts would have to be submitted with the final/revised EIS for acceptance. This alternative would place the abstracting of an EIS close to the source that is gathering the information for the EIS. EQC would review the abstract for completeness and then publish it in the EQC Bulletin. This would leave only the revisions of the indexes for EQC to prepare. This could be done internally, or it might be contracted to a consultant.

Disadvantages:

EQC cannot require Federal agencies to comply with State regulations except in the case of joint Federal-State projects. CEQ regulations mandate that in the case of joint Federal-State EIS's, the Federal Agency must comply with applicable State laws.[12] The EQC would have to revise the indexes, which would create additional work for their staff. If the EQC decided to contract to have the indexes revised, it would require additional funds which may not be available. Workshop sessions detailing how to abstract EIS's, would have to be held for the preparer. Given EQC's present staffing level, this might prove difficult.

5. Updating by an "information broker"

Advantages:

The updating of the bibliography could be turned over to information brokers such as the Hawaii Coastal Zone Data Bank (HCZDB), DPED Library, Sea Grant Marine Advisory Program Library, or the Hawaiian Collection of the State or University Libraries, for the purpose of updating. These information brokers have experience in compiling abstracts and indexes and would not need much training. These agencies are set up to handle information storage and retrieval and would be involved in the use of much of the data base anyway. This alternative would place the system closer to potential users other than agencies and consultants.

Disadvantages:

The information brokers do not have direct responsibility for the EIS system and would require additional funds to carry out the task of updating the data base.

6. Updating by a commercial firm

Advantages:

Specifications could be drawn up for the updating, and a commercial firm could be engaged to provide the updating according to contract specification. Firms such as Library Information Service (Hawaii) or Documentation Associates (Los Angeles) would be qualified to do the updating.

Disadvantages:

Funds would have to be appropriated to pay a commercial firm for the updating. The data base system would be removed from the agencies most responsible for and most interested in the EIS system.

Choice among alternatives

On the basis of the above discussion of the advantages and disadvantages of the six alternatives presented, we suggest that alternative 4 be given the highest priority. As pointed out, a requirement that EIS preparers prepare the abstracts places the responsibility for preparing the abstracts at the point where the information is being gathered. This would take the burden of preparing the abstracts away from EQC. The EQC could then print the abstracts in the EQC Bulletin for distribution. The EQC cannot require that federal agencies prepare abstracts of their EIS's. However, a request from the Governor's Office for compliance from Federal agencies might be persuasive. In the event that some or all Federal agencies do not cooperate the EQC could ask for the assistance of other state agencies to help them complete the abstracting. For example, the Environmental Center, OEQC, or both could be asked to abstract EIS's not covered by EQC regulations to the extent that they review them. This would entail only a small amount of additional work by their staffs, and it would leave only a very small number of EIS's for which abstracts would have to be prepared by the EQC staff or by others under contract to the EQC.

It is important to note that, in the user survey, most representatives of Federal, State, County agencies and private consultants felt that abstracting EIS's prior to submission would not add much work to the preparation of the EIS's.

Updating the indexes would prove to be a bigger problem. The EQC's staff would either have to handle the updates internally or contract to have them done. The computer program for compiling the indexes has already been designed. EQC could request access to the State computer to do the revising of the indexes. EQC might consider doing manual updates, though this would take a large number of man-hours to accomplish.

EQC might contract this task to a commercial firm. Since the index update would only have to be done once a year and new EIS's average approximately 40-50 a year, the cost of the contract would not be great.

We suggest that if alternative 4 is not acceptable, alternative 6 be considered. Alternative 6 would be by far the most costly. This alternative would also remove the system completely out of the hands of those who would benefit the most. However this alternative has the advantage of not requiring the addition of personnel to any state funded agencies. It would also not add additional duties to any State agencies as the other alternatives would do.

Alternative 5 would leave the updating to agencies that will not benefit directly by the data base system and there may be problems convincing these information brokers to undertake this task. Additional funds would have to be appropriated to these agencies so they could hire staff to perform this function. Having agencies not involved in the EIS system perform the update might lessen the committment to maintain the data base. This alternative is rated third by the project staff.

Alternatives 1, 2, and 3 would require an existing agency to update the data base which would put demands on staff time of those agencies. The agencies cited in alternatives 1, 2, and 3 are already working to capacity and could not afford the additional tasks.

The difference between alternative 3 and 4, both involving EQC, is that in alternative 4 the abstracts are prepared by the EIS preparer and not EQC staff. Alternative 3 would have the EQC prepare the abstract which would place an additional burden on their small staff.

Costs of Updating

The costs of updating the EIS Bibliography can be broken down into two components:

1. Cost of abstracting new EIS's and reproducing and distributing the abstracts.
2. Cost of revising the indexes and reproducing, and distributing the revised indexes.

Abstracting costs

The annual costs of preparing and distribution of abstracts of EIS's that have been accepted after the completion of the initial data base may be estimated, assuming there

are 50 new EIS's a year. The total annual cost of abstract updating, as detailed in Table 3, is estimated to be $800. If the EIS preparer is responsible for abstracting, the cost is estimated to be $300.

Index revision costs

Assuming the indexes are revised by computer, the annual cost of revising the index would consist of: inputting new abstracts, compiling a new index, printing and distributing the index is estimated in Table 4. The total estimated annual cost for index revision is estimated to be $480.

Summary

The total yearly cost of updating the data base should not exceed $1,280 per year if preparers are not responsible for abstracting their EIS's and $780 if the EQC requires preparers to abstract their EIS's. In fact, the total cost of doing the more than 320 original EIS's was less than $10,000 including salaries of project team, abstractors, and the cost of computer program development, which works out to approximately $3 an abstract or about $1,500 for 50 abstracts.

Costs using manual methods

The cost of manually updating the data base is difficult to estimate. However, the printing cost would be approximately the same using either method. The abstracting cost would be approximately the same using either method. That leaves computerized compilation of the indexes vs. manual methods. Subtracting the cost of printing and abstracting from the total cost by computer method would leave approximately $130 for computer cost. Paying a typist to update the data base manually, even using a word processor, would be considerably higher.

Future Studies

The completion of the EIS Bibliographic Data Base should not be viewed as an end to the process of improving access to the information generated by the EIS system. We suggest four areas as worthy of further exploration:

1) Evaluation of the EIS data base system after initial use.

2) Follow up on predictions made in EIS's.

3) Inclusion of Negative Declarations in the EIS data base system.

4) Inclusion of related materials in the system.

Evaluation of the system

The intended purpose of the data base was to provide preparers and reviewers with easy access to information in EIS's so as to encourage in-house preparation of EIS's and enhance the capabilities of reviewers of EIS's. However, the actual application and

Table 3.

Estimates of Cost for Additional Abstracts

Abstracting:	
50 absts x 2 hrs/abst[a] x $5/hr[b]	$500.00
Abstract typing:	
50 absts x 0.2 hrs/abst[a] x $5/hr[b]	50.00
Xerographic copying:	
50 absts x 100 user copies x $.05/copy[d]	250.00
Distribution:	
Minimal, because most users are state and county agencies to whom copies may be sent through interdepartmental mail.	
Total estimated cost:	$800.00
Total estimated cost if abstracting were done by EIS preparers[c]	$300.00

a) Based on experience in preparing the initial data base.

b) Costs were less when done by student helpers at the Environmental Center.

c) Abstracting costs would be borne by EIS preparers in alternative 4.

d) Cost of xerography includes cost of paper.

Table 4.

Estimate of cost for Index Revisions

Input of Abstracts on Computer Tapes	
50 absts x .20 hr/abst[a] x $8/hr[b]	$ 80.00
Computer program cost	0.00[c]
Compiling charges (Computer's Central Processing Unit (CPU) Charges)	
$256/hr[d] x .10 hrs[e]	25.60
Output cost[f]	25.00
Xerographic copying	
70 pages of index[g] x 100 users copies x $.05/copy[h]	350.00
Total estimated cost	$480.00

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a) Based on one half the number trained keypunchers were able to do during the project.

b) Based on $5.00/hr keypuncher cost and $3.00/hr computer cost using a time-sharing option (TSO).

c) The computer programs have already been developed.

d) Based on University of Hawaii Computing Center Charges for in-house work.

e) Based on the time it took to compile original indexes.

f) Output costs were actually based on the number of lines that could be printed for $25. At .0004 a line for printing cost using the UH Computer Center cost figure 62,500 lines could be printed. This would equal approximately 962 pages of output which is far greater than what we estimate the number of pages for the index, to be.

g) Estimated ceiling for the number of pages in the index.

utilization of the data base may differ from the original intent once it becomes available. The Center suggests that the use of the data base be evaluated after there has been significant use of the system, say three years after its initial implementation. The evaluation should answer three questions:

A. Did the data base serve its original target group?

B. What changes should be made so it can better meet the needs of the target group?

C. Are there any initially unforseen uses of the data base and how can the system be redesigned to better meet these uses?

The future of the data base should rest upon this evaluation.

Follow-up on predictions in EIS's

An EIS collects various kinds of information on baseline social and physical conditions, make predictions of what the impacts on those conditions will result from a proposed action on the baseline and details of measures that will or might be implemented to mitigate the undesirable impacts. A follow-up study on the predictions could yield information as the capability of forecasting environmental impacts and the value of the EIS as an information document. Several interviewees during the users survey indicated that such a study would be useful. With the instutution of an indexed information access system to previously written EIS's, the timing of such a study is appropriate. The reuse of EIS information is based on the assumption that the information in EIS's is valid. To the extent that information in EIS's is incorrect the data base could be responsible for perpetuating and extending the use of incorrect information.

The suggested study could be carried out by selecting a representative sample of EIS's in Hawaii. The predictive and mitigative measures set forth by the EIS could then be compared to the actual impacts of the actions to determine if the prediction and mitigation measures took place as stated.

Inclusion of Negative Declarations in the Data Base

Originally the Data Base Project team planned to include negative declarations in the data base. Upon examining these documents, and on the advice of several agency and private consultant representatives, negative declarations were dropped from the data base. It was felt both by the project staff and interviewees that the negative declarations had comparatively low information value. However, the feasibility of incorporating the negative declarations into the system should be studied in the light of the final format of the data base system. Perhaps the negative declaration could be incorporated in a different, less intensive manner than EIS's. This study could be carried out in a shorter time period and at a lower cost than the EIS study.

Inclusion of Related Material in the Data Base

The EIS Bibliographic Data Base might be viewed as the first in a series of steps to facilitate information retrieval for a variety of documents that are used or could be useful for preparing EIS system documents. The expanded data base might usefully include

resource inventories such as the U.S. Army Corps of Engineer's An Ornithological Survey of Hawaiian Wetlands produced by Ahuimanu Productions and the U.S. Fish and Wildlife's Stream Modification In Hawaii: Part A: Statewide inventory of Streams; Habitat Factors and Associated Biota; Soil survey's by the Land Study Bureau and the U.S. Soil Conservation Service; and other material useful in preparing EIS's.

A study of the feasibility of including such documents in the data base would include setting parameters on the type of materials for inclusion, and redesigning the system to fit the additional types of documents. Since an expansion of the data base would greatly increase the over all cost of the system and create new problems for updating, the study should provide a revised cost estimate and recommendations for updating.

NOTES

1. Cox, Rappa, Miller. The Hawaii State Environmental Impact Statement System. Final Report. University of Hawaii, Environmental Center, Honolulu, 1978, p. 8.

2. Ibid, Cox et al.

3. Hawaii. Revised Statutes (1968), c 341.

4. Ibid, section 341-1.

5. United States. Office of Coastal Zone Management. State of Hawaii Coastal Zone Management Program and Final Environmental Impact Statement. Washington, D. C., 1978, p. 40.

6. op. cit. Cox et al.

7. Hawaii. State Department of Transportation. Revised Environmental Impact Statement for Development of Honokohau Boat Harbor. Honolulu, 1975, pp. II-30, pp. II-42, etc.

8. Hawaii. Kaimuki Library. "Numerical List of Hawaii's Environmental Impact Statements, July 1978". Honolulu.

9. H. Mogi - Planning and Research, Incorporated. Bibliography of Sources Relating to Coastal Zone Land and Water Uses. Coastal Zone Management Program, Honolulu, 1975, pp. 152-161.

10. Hawaii. Revised Statutes, (1968). c 341-8(8).

11. Hawaii. Revised Statutes, (1968). c 343-3.

12. United States. 40 CFR Part 1506.